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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,690	08/19/2003	Yoshiyuki Kurokawa	0553-0323.01	5081

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Edward D. Manzo
Cook, Alex, McFarron, Manzo,
Cummings & Mehler, Ltd.
200 West Adams St., Ste. 2850
Chicago, IL 60606

EXAMINER

CLARK, JASMINE JHIHAN B

ART UNIT PAPER NUMBER

2815

DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/643,690

Applicant(s)

KUROKAWA ET AL.

Examiner

Jasmine J Clark

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-- Th MAILING DATE of this communication app ars on th cover sh t with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08/19/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, for example, the recitation "means for intercepting charge injection...; means for carrying out charge injection...; means for stopping charge injection..." is indefinite, and it is unclear exactly how the structure of these elements should be constructed or established. Please also see claims 7, 13, and 21.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 7-8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tempel et al. (US 5,883,832), Applicants' submitted prior art. Insofar as the claims are understood, they are clearly met by this reference. See, for example Fig. 2 of the reference where a plurality memory transistors comprise: an active layer 1 comprising a source region 3, a drain region 2 and a channel forming region 9; a first insulating film 6 formed on the active layer 1; a

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floating gate 4 formed on the first insulating film 6; a second insulating film 8 formed on the floating gate 4; and a control gate 7 formed on the second insulating film 8, a first region and a second region included in the channel forming region 9; means for intercepting charge injection from the first region to the floating gate ((a) see a thicker of the first insulating film between the floating gate and the channel and drain regions); means for carrying out charge injection from the first region to the floating gate ((b)see a thinner area of the first insulating film between the floating gate and the drain region 2); and means for stopping charge injection from the second region to the floating gate. (see (b)),

Concerning claim 2, wherein a thickness of the first insulating film formed on the first region is thicker than a thickness of the first insulating film formed on the second region (see (a) and (b) above), and see Fig. 2.

Concerning claim 4, wherein the memory transistor stores multi-value information, please see column 3, lines 18+).

Concerning claim 7, please see Fig. 3 for a plurality of memory transistors.

Concerning claims 8 and 10, please claims 2 and 4.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13-14, and 21-22 as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied to claims 1-2, 4, 7-8 and 10 above, and further in view of Ra (US 6,087,223), Applicants' submitted prior art.

As per the above discussion, the applied reference teach having a floating gate on the first insulating film, but fail to teach having a second floating gate as claimed. Ra teach having a plurality of floating gates formed on an insulating film. Hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have more than one floating gate, as is notoriously known.

Concerning claims 14 and 22, please the above discussion under claim 2.

Telephone Inquiry Contacts

5. The references of interest are cited:

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Sato et al. (US 4,630), Kawamura et al. (US 406,524), Morii (US 5,847,411), Forbes (US 6,384,448 B1), and Kurokawa et al. (US 6,621,130 B2) teach a semiconductor device which relates to a memory transistor including a floating gate and control gate.

Telephone Inquiry Contacts

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasmine J Clark whose telephone number is (571) 272-1726. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jjbc/06/12/04

JASMINE CLARK
PRIMARY EXAMINER

